

## § 98.8

(13) Method 8015C, Nonhalogenated Organics By Gas Chromatography, Revision 3, February 2007 (Method 8015C), <http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/8015c.pdf>; in EPA Publication No. SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," Third Edition, IBR approved for § 98.244(b)(4)(viii).

(14) AP 42, Section 7.1, Organic Liquid Storage Tanks, November 2006 (AP 42, Section 7.1), <http://www.epa.gov/ttn/chief/ap42/ch07/final/c07s01.pdf>; in Chapter 7, Liquid Storage Tanks, of AP 42, Compilation of Air Pollutant Emission Factors, 5th Edition, Volume I, IBR approved for § 98.253(m)(1) and § 98.256(o)(2)(i).

(n)–(o) [Reserved]

(p) The following material is available for purchase from the American Association of Petroleum Geologists, 1444 South Boulder Avenue, Tulsa, Oklahoma 74119, (918) 584-2555, <http://www.aapg.org>.

(1) Geologic Note: AAPG-CSD Geologic Provinces Code Map: AAPG Bulletin, Prepared by Richard F. Meyer, Laure G. Wallace, and Fred J. Wagner, Jr., Volume 75, Number 10 (October 1991), pages 1644–1651, IBR approved for § 98.238.

(2) Alaska Geological Province Boundary Map, Compiled by the American Association of Petroleum Geologists Committee on Statistics of Drilling in cooperation with the USGS, 1978, IBR approved for § 98.238.

(q) The following material is available from the Energy Information Administration (EIA), 1000 Independence Ave., SW., Washington, DC 20585, (202) 586-8800, [http://www.eia.doe.gov/pub/oil\\_gas/natural\\_gas/data\\_publications/field\\_code\\_master\\_list/current/pdf/fcmr\\_all.pdf](http://www.eia.doe.gov/pub/oil_gas/natural_gas/data_publications/field_code_master_list/current/pdf/fcmr_all.pdf).

(1) Oil and Gas Field Code Master List 2008, DOE/EIA-0370(08), January 2009, IBR approved for § 98.238.

## 40 CFR Ch. I (7-1-18 Edition)

(2) [Reserved]

[74 FR 56374, Oct. 30, 2009, as amended at 75 FR 39759, July 12, 2010; 75 FR 66458, Oct. 28, 2010; 75 FR 74488, Nov. 30, 2010; 75 FR 74916, Dec. 1, 2010; 75 FR 79138, Dec. 17, 2010; 78 FR 68202, Nov. 13, 2013; 78 FR 71948, Nov. 29, 2013; 81 FR 89250, Dec. 9, 2016]

### § 98.8 What are the compliance and enforcement provisions of this part?

Any violation of any requirement of this part shall be a violation of the Clean Air Act, including section 114 (42 U.S.C. 7414). A violation includes but is not limited to failure to report GHG emissions, failure to collect data needed to calculate GHG emissions, failure to continuously monitor and test as required, failure to retain records needed to verify the amount of GHG emissions, and failure to calculate GHG emissions following the methodologies specified in this part. Each day of a violation constitutes a separate violation.

### § 98.9 Addresses.

All requests, notifications, and communications to the Administrator pursuant to this part must be submitted electronically and in a format as specified by the Administrator. For example, any requests, notifications and communications that can be submitted through the electronic GHG reporting tool, must be submitted through that tool. If not specified, requests, notifications or communications shall be submitted to the following address:

(a) For U.S. mail. Director, Climate Change Division, 1200 Pennsylvania Ave., NW., Mail Code: 6207J, Washington, DC 20460.

(b) For package deliveries. Director, Climate Change Division, 1310 L St, NW., Washington, DC 20005.

[74 FR 56374, Oct. 30, 2009, as amended at 76 FR 73900, Nov. 29, 2011]

TABLE A-1 TO SUBPART A OF PART 98—GLOBAL WARMING POTENTIALS  
[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
<b>Chemical-Specific GWPs</b>			
Carbon dioxide .....	124-38-9	CO <sub>2</sub> .....	1

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[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
Methane .....	74-82-8	CH <sub>4</sub> .....	<sup>a</sup> 25
Nitrous oxide .....	10024-97-2	N <sub>2</sub> O .....	<sup>a</sup> 298
<b>Fully Fluorinated GHGs</b>			
Sulfur hexafluoride .....	2551-62-4	SF <sub>6</sub> .....	<sup>a</sup> 22,800
Trifluoromethyl sulphur pentafluoride .....	373-80-8	SF <sub>3</sub> CF <sub>3</sub> .....	17,700
Nitrogen trifluoride .....	7783-54-2	NF <sub>3</sub> .....	17,200
PFC-14 (Perfluoromethane) .....	75-73-0	CF <sub>4</sub> .....	<sup>a</sup> 7,390
PFC-116 (Perfluoroethane) .....	76-16-4	C <sub>2</sub> F <sub>6</sub> .....	<sup>a</sup> 12,200
PFC-218 (Perfluoropropane) .....	76-19-7	C <sub>3</sub> F <sub>8</sub> .....	<sup>a</sup> 8,830
Perfluorocyclopropane .....	931-91-9	C <sub>3</sub> C <sub>3</sub> F <sub>6</sub> .....	17,340
PFC-3-1-10 (Perfluorobutane) .....	355-25-9	C <sub>4</sub> F <sub>10</sub> .....	<sup>a</sup> 8,860
PFC-318 (Perfluoroclobutane) .....	115-25-3	C <sub>4</sub> C <sub>3</sub> F <sub>8</sub> .....	<sup>a</sup> 10,300
PFC-4-1-12 (Perfluoropentane) .....	678-26-2	C <sub>5</sub> F <sub>12</sub> .....	<sup>a</sup> 9,160
PFC-5-1-14 (Perfluorohexane, FC-72) .....	355-42-0	C <sub>6</sub> F <sub>14</sub> .....	<sup>a</sup> 9,300
PFC-6-1-12 .....	335-57-9	C <sub>7</sub> F <sub>16</sub> ; CF <sub>3</sub> (CF <sub>2</sub> ) <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 7,820
PFC-7-1-18 .....	307-34-6	C <sub>8</sub> F <sub>18</sub> ; CF <sub>3</sub> (CF <sub>2</sub> ) <sub>6</sub> CF <sub>3</sub> .....	<sup>b</sup> 7,620
PFC-9-1-18 .....	306-94-5	C <sub>10</sub> F <sub>18</sub> .....	7,500
PFPMIE (HT-70) .....	NA	CF <sub>3</sub> OCF(CF <sub>3</sub> )CF <sub>2</sub> OCF <sub>2</sub> OCF <sub>3</sub> .....	10,300
Perfluorodecalin (cis) .....	60433-11-6	Z-C <sub>11</sub> F <sub>18</sub> .....	<sup>b</sup> 7,236
Perfluorodecalin (trans) .....	60433-12-7	E-C <sub>10</sub> F <sub>18</sub> .....	<sup>b</sup> 6,288
<b>Saturated Hydrofluorocarbons (HFCs) With Two or Fewer Carbon-Hydrogen Bonds</b>			
HFC-23 .....	75-46-7	CHF <sub>3</sub> .....	<sup>a</sup> 14,800
HFC-32 .....	75-10-5	CH <sub>2</sub> F <sub>2</sub> .....	<sup>a</sup> 675
HFC-125 .....	354-33-6	C <sub>2</sub> HF <sub>5</sub> .....	3,500
HFC-134 .....	359-35-3	C <sub>2</sub> H <sub>2</sub> F <sub>4</sub> .....	<sup>a</sup> 1,100
HFC-134a .....	811-97-2	CH <sub>2</sub> CCF <sub>3</sub> .....	<sup>a</sup> 1,430
HFC-227ca .....	2252-84-8	CF <sub>3</sub> CF <sub>2</sub> CHF <sub>2</sub> .....	<sup>b</sup> 2640
HFC-227ea .....	431-89-0	C <sub>3</sub> HF <sub>7</sub> .....	3,220
HFC-236cb .....	677-56-5	CH <sub>2</sub> CCF <sub>3</sub> CF <sub>3</sub> .....	1,340
HFC-236ea .....	431-63-0	CHF <sub>3</sub> CHFCF <sub>3</sub> .....	1,370
HFC-236fa .....	690-39-1	C <sub>3</sub> H <sub>2</sub> F <sub>6</sub> .....	<sup>a</sup> 9,810
HFC-329p .....	375-17-7	CHF <sub>3</sub> CF <sub>2</sub> CF <sub>3</sub> CF <sub>3</sub> .....	<sup>b</sup> 2360
HFC-43-10mee .....	138495-42-8	CF <sub>3</sub> CFHCFHCF <sub>2</sub> CF <sub>3</sub> .....	<sup>a</sup> 1,640
<b>Saturated Hydrofluorocarbons (HFCs) With Three or More Carbon-Hydrogen Bonds</b>			
HFC-41 .....	593-53-3	CH <sub>3</sub> F .....	<sup>a</sup> 92
HFC-143 .....	430-66-0	C <sub>2</sub> H <sub>3</sub> F <sub>3</sub> .....	<sup>a</sup> 353
HFC-143a .....	420-46-2	C <sub>2</sub> H <sub>3</sub> F <sub>3</sub> .....	<sup>a</sup> 4,470
HFC-152 .....	624-72-6	CH <sub>2</sub> FCH <sub>2</sub> F .....	53
HFC-152a .....	75-37-6	CH <sub>3</sub> CHF <sub>2</sub> .....	<sup>a</sup> 124
HFC-161 .....	353-36-6	CH <sub>3</sub> CH <sub>2</sub> F .....	12
HFC-245ca .....	679-86-7	C <sub>4</sub> H <sub>3</sub> F <sub>4</sub> .....	<sup>a</sup> 693
HFC-245cb .....	1814-88-6	CF <sub>3</sub> CF <sub>2</sub> CH <sub>3</sub> .....	<sup>b</sup> 4620
HFC-245ea .....	24270-66-4	CHF <sub>3</sub> CHFCFHF <sub>2</sub> .....	<sup>b</sup> 235
HFC-245eb .....	431-31-2	CH <sub>2</sub> FCHFCF <sub>3</sub> .....	<sup>b</sup> 290
HFC-245fa .....	460-73-1	CHF <sub>3</sub> CH <sub>2</sub> CF <sub>3</sub> .....	1,030
HFC-263fb .....	421-07-8	CH <sub>3</sub> CH <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 76
HFC-272ca .....	420-45-1	CH <sub>3</sub> CF <sub>2</sub> CH <sub>3</sub> .....	<sup>b</sup> 144
HFC-365mfc .....	406-58-6	CH <sub>3</sub> CF <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub> .....	794
<b>Saturated Hydrofluoroethers (HFEs) and Hydrochlorofluoroethers (HCFEs) With One Carbon-Hydrogen Bond</b>			
HFE-125 .....	3822-68-2	CHF <sub>2</sub> OCF <sub>3</sub> .....	14,900
HFE-227ea .....	2356-62-9	CF <sub>3</sub> CHFOCF <sub>3</sub> .....	1,540
HFE-329mcc2 .....	134769-21-4	CF <sub>3</sub> CF <sub>2</sub> OCF <sub>2</sub> CHF <sub>2</sub> .....	919
HFE-329me3 .....	428454-68-6	CF <sub>3</sub> CFHCF <sub>2</sub> OCF <sub>3</sub> .....	<sup>b</sup> 4,550
1,1,1,2,2,3,3-Heptafluoro-3-(1,2,2,2-tetrafluoroethoxy)-propane .....	3330-15-2	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> OCHFCF <sub>3</sub> .....	<sup>b</sup> 6,490
<b>Saturated HFEs and HCFEs With Two Carbon-Hydrogen Bonds</b>			
HFE-134 (HG-00) .....	1691-17-4	CHF <sub>2</sub> OCHF <sub>2</sub> .....	6,320
HFE-236ca .....	32778-11-3	CHF <sub>2</sub> OCF <sub>2</sub> CHF <sub>2</sub> .....	<sup>b</sup> 4,240
HFE-236ca12 (HG-10) .....	78522-47-1	CHF <sub>2</sub> OCF <sub>2</sub> OCHF <sub>2</sub> .....	2,800
HFE-236ea2 (Desflurane) .....	57041-67-5	CHF <sub>2</sub> OCHFCF <sub>3</sub> .....	989

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[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
HFE-236fa .....	20193-67-3	CF <sub>3</sub> CH <sub>2</sub> OCF <sub>3</sub> .....	487
HFE-338mcf2 .....	156053-88-2	CF <sub>3</sub> CF <sub>2</sub> OCH <sub>2</sub> CF <sub>3</sub> .....	552
HFE-338mm21 .....	26103-08-2	CHF <sub>2</sub> OCH(CF <sub>3</sub> ) <sub>2</sub> .....	380
HFE-338pcc13 (HG-01) .....	188690-78-0	CHF <sub>2</sub> OCF <sub>2</sub> CF <sub>2</sub> OCHF <sub>2</sub> .....	1,500
HFE-43-10pccc (H-Galden 1040x, HG-11) .....	E1730133	CHF <sub>2</sub> OCF <sub>2</sub> OC <sub>2</sub> F <sub>2</sub> OCHF <sub>2</sub> .....	1,870
HCFE-235ca2 (Enflurane) .....	13838-16-9	CHF <sub>2</sub> OCF <sub>2</sub> CHFCI .....	<sup>b</sup> 583
HCFE-235da2 (Isoflurane) .....	26675-46-7	CHF <sub>2</sub> OCHCICF <sub>3</sub> .....	350
HG-02 .....	205367-61-9	HF <sub>2</sub> C-(OCF <sub>2</sub> CF <sub>2</sub> ) <sub>2</sub> -OCF <sub>2</sub> H .....	<sup>b</sup> 3,825
HG-03 .....	173350-37-3	HF <sub>2</sub> C-(OCF <sub>2</sub> CF <sub>2</sub> ) <sub>3</sub> -OCF <sub>2</sub> H .....	<sup>b</sup> 3,670
HG-20 .....	249932-25-0	HF <sub>2</sub> C-(OCF <sub>2</sub> ) <sub>2</sub> -OCF <sub>2</sub> H .....	<sup>b</sup> 5,300
HG-21 .....	249932-26-1	HF <sub>2</sub> C-OCF <sub>2</sub> CF <sub>2</sub> OCF <sub>2</sub> OCF <sub>2</sub> O-CF <sub>3</sub> H .....	<sup>b</sup> 3,890
HG-30 .....	188690-77-9	HF <sub>2</sub> C-(OCF <sub>2</sub> ) <sub>3</sub> -OCF <sub>2</sub> H .....	<sup>b</sup> 7,330
1,1,3,3,4,4,6,6,7,7,9,9,10,10,12,12,13,13,15,15-eicosfluoro-2,5,8,11,14-Pentaoxapentadecane.	173350-38-4	HCF <sub>2</sub> O(CF <sub>2</sub> OCF <sub>2</sub> ) <sub>4</sub> CF <sub>2</sub> H .....	<sup>b</sup> 3,630
1,1,2-Trifluoro-2-(trifluoromethoxy)-ethane .....	84011-06-3	CHF <sub>2</sub> CHFOCF <sub>3</sub> .....	<sup>b</sup> 1,240
Trifluoro(fluoromethoxy)methane .....	2261-01-0	CH <sub>2</sub> FOCF <sub>3</sub> .....	<sup>b</sup> 751

Saturated HFEs and HCFEs With Three or More Carbon-Hydrogen Bonds

HFE-143a .....	421-14-7	CH <sub>3</sub> OCF <sub>3</sub> .....	756
HFE-245cb2 .....	22410-44-2	CH <sub>3</sub> OCF <sub>2</sub> CF <sub>3</sub> .....	708
HFE-245fa1 .....	84011-15-4	CHF <sub>2</sub> CH <sub>2</sub> OCF <sub>3</sub> .....	286
HFE-245fa2 .....	1885-48-9	CHF <sub>2</sub> OCH <sub>2</sub> CF <sub>3</sub> .....	659
HFE-254cb2 .....	425-88-7	CH <sub>3</sub> OCF <sub>2</sub> CHF <sub>2</sub> .....	359
HFE-263fb2 .....	460-43-5	CF <sub>3</sub> CH <sub>2</sub> OCH <sub>3</sub> .....	11
HFE-263m1; R-E-143a .....	690-22-2	CF <sub>3</sub> OCH <sub>2</sub> CH <sub>3</sub> .....	<sup>b</sup> 29
HFE-347mc3 (HFE-7000) .....	375-03-1	CH <sub>3</sub> OCF <sub>2</sub> CF <sub>2</sub> CF <sub>3</sub> .....	575
HFE-347mcf2 .....	171182-95-9	CF <sub>3</sub> CF <sub>2</sub> OCH <sub>2</sub> CHF <sub>2</sub> .....	374
HFE-347mmv1 .....	22052-84-2	CH <sub>3</sub> OCF <sub>2</sub> (CF <sub>3</sub> ) <sub>2</sub> .....	343
HFE-347mmz1 (Sevoflurane) .....	28523-86-6	(CF <sub>3</sub> ) <sub>2</sub> CHOCH <sub>2</sub> F .....	<sup>c</sup> 216
HFE-347pcf2 .....	406-78-0	CHF <sub>2</sub> CF <sub>2</sub> OCH <sub>2</sub> CF <sub>3</sub> .....	580
HFE-356mc3 .....	382-34-3	CH <sub>3</sub> OCF <sub>2</sub> CHFCF <sub>3</sub> .....	101
HFE-356mf2 .....	333-36-8	CF <sub>3</sub> CH <sub>2</sub> OCH <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 17
HFE-356mm1 .....	13171-18-1	(CF <sub>3</sub> ) <sub>2</sub> CHOCH <sub>3</sub> .....	27
HFE-356pcc3 .....	160620-20-2	CH <sub>3</sub> OCF <sub>2</sub> CF <sub>2</sub> CHF <sub>2</sub> .....	110
HFE-356pcf2 .....	50807-77-7	CHF <sub>2</sub> CH <sub>2</sub> OCF <sub>2</sub> CHF <sub>2</sub> .....	265
HFE-356pcf3 .....	35042-99-0	CHF <sub>2</sub> OCH <sub>2</sub> CF <sub>2</sub> CHF <sub>2</sub> .....	502
HFE-365mcf2 .....	22052-81-9	CF <sub>3</sub> CF <sub>2</sub> OCH <sub>2</sub> CH <sub>3</sub> .....	<sup>b</sup> 58
HFE-365mcf3 .....	378-16-5	CF <sub>3</sub> CF <sub>2</sub> CH <sub>2</sub> OCH <sub>3</sub> .....	11
HFE-374pc2 .....	512-51-6	CH <sub>3</sub> CH <sub>2</sub> OCF <sub>2</sub> CHF <sub>2</sub> .....	557
HFE-449s1 (HFE-7100) Chemical blend .....	163702-07-6	C <sub>4</sub> F <sub>9</sub> OCH <sub>3</sub> .....	297
HFE-569sf2 (HFE-7200) Chemical blend .....	163702-08-7	(CF <sub>3</sub> ) <sub>2</sub> CFCF <sub>2</sub> OCH <sub>3</sub> .....	
	163702-05-4	C <sub>4</sub> F <sub>9</sub> OC <sub>2</sub> H <sub>5</sub> .....	59
	163702-06-5	(CF <sub>3</sub> ) <sub>2</sub> CFCF <sub>2</sub> OCH <sub>2</sub> H <sub>5</sub> .....	
HG-01 .....	73287-23-7	CH <sub>3</sub> OCF <sub>2</sub> CF <sub>2</sub> OCH <sub>3</sub> .....	<sup>b</sup> 222
HG-02 .....	485399-46-0	CH <sub>3</sub> O(CF <sub>2</sub> CF <sub>2</sub> O) <sub>2</sub> CH <sub>3</sub> .....	<sup>b</sup> 236
HG-03 .....	485399-48-2	CH <sub>3</sub> O(CF <sub>2</sub> CF <sub>2</sub> O) <sub>3</sub> CH <sub>3</sub> .....	<sup>b</sup> 221
Difluoro(methoxy)methane .....	359-15-9	CH <sub>3</sub> OCHF <sub>2</sub> .....	<sup>b</sup> 144
2-Chloro-1,1,2-trifluoro-1-methoxyethane .....	425-87-6	CH <sub>3</sub> OCF <sub>2</sub> CHFCI .....	<sup>b</sup> 122
1-Ethoxy-1,1,2,2,3,3-heptafluoropropane .....	22052-86-4	CF <sub>3</sub> CF <sub>2</sub> CF <sub>2</sub> OCH <sub>2</sub> CH <sub>3</sub> .....	<sup>b</sup> 61
2-Ethoxy-3,3,4,4,5-pentafluorotetrahydro-2,5-bis[1,2,2,2-tetrafluoro-1-(trifluoromethyl)ethyl]furan.	920979-28-8	C <sub>12</sub> H <sub>5</sub> F <sub>19</sub> O <sub>2</sub> .....	<sup>b</sup> 56
1-Ethoxy-1,1,2,3,3-hexafluoropropane .....	380-34-7	CF <sub>3</sub> CHFCF <sub>2</sub> OCH <sub>2</sub> CH <sub>3</sub> .....	<sup>b</sup> 23
Fluoro(methoxy)methane .....	460-22-0	CH <sub>3</sub> OCH <sub>2</sub> F .....	<sup>b</sup> 13
1,1,2,2-Tetrafluoro-3-methoxy-propane; Methyl 2,2,3,3-tetrafluoropropyl ether.	60598-17-6	CHF <sub>2</sub> CF <sub>2</sub> CH <sub>2</sub> OCH <sub>3</sub> .....	<sup>b</sup> 0.5
1,1,2,2-Tetrafluoro-1-(fluoromethoxy)ethane .....	37031-31-5	CH <sub>2</sub> FOCF <sub>2</sub> CF <sub>2</sub> H .....	<sup>b</sup> 871
Difluoro(fluoromethoxy)methane .....	461-63-2	CH <sub>2</sub> FOCHF <sub>2</sub> .....	<sup>b</sup> 617
Fluoro(fluoromethoxy)methane .....	462-51-1	CH <sub>2</sub> FOCH <sub>2</sub> F .....	<sup>b</sup> 130

Fluorinated Formates

Trifluoromethyl formate .....	85358-65-2	HCOOCF <sub>3</sub> .....	<sup>b</sup> 588
Perfluoroethyl formate .....	313064-40-3	HCOOCF <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 580
1,2,2,2-Tetrafluoroethyl formate .....	481631-19-0	HCOOCHFCF <sub>3</sub> .....	<sup>b</sup> 470
Perfluorobutyl formate .....	197218-56-7	HCOOCF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 392
Perfluoropropyl formate .....	271257-42-2	HCOOCF <sub>2</sub> CF <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 376
1,1,1,3,3,3-Hexafluoropropan-2-yl formate .....	856766-70-6	HCOOCH(CF <sub>3</sub> ) <sub>2</sub> .....	<sup>b</sup> 333
2,2,2-Trifluoroethyl formate .....	32042-38-9	HCOOCH <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 33

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[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
3,3,3-Trifluoropropyl formate .....	1344118-09-7	HCOOCH <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 17
<b>Fluorinated Acetates</b>			
Methyl 2,2,2-trifluoroacetate .....	431-47-0	CF <sub>3</sub> COOCH <sub>3</sub> .....	<sup>b</sup> 52
1,1-Difluoroethyl 2,2,2-trifluoroacetate .....	1344118-13-3	CF <sub>3</sub> COOCF <sub>2</sub> CH <sub>3</sub> .....	<sup>b</sup> 31
Difluoromethyl 2,2,2-trifluoroacetate .....	2024-86-4	CF <sub>3</sub> COOCH <sub>2</sub> .....	<sup>b</sup> 27
2,2,2-Trifluoroethyl 2,2,2-trifluoroacetate .....	407-38-5	CF <sub>3</sub> COOCH <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 7
Methyl 2,2-difluoroacetate .....	433-53-4	HCF <sub>2</sub> COOCH <sub>3</sub> .....	<sup>b</sup> 3
Perfluoroethyl acetate .....	343269-97-6	CH <sub>3</sub> COOCF <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 2.1
Trifluoromethyl acetate .....	74123-20-9	CH <sub>3</sub> COOCF <sub>3</sub> .....	<sup>b</sup> 2.0
Perfluoropropyl acetate .....	1344118-10-0	CH <sub>3</sub> COOCF <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 1.8
Perfluorobutyl acetate .....	209597-28-4	CH <sub>3</sub> COOCF <sub>2</sub> CF <sub>2</sub> CF <sub>2</sub> CF <sub>3</sub> .....	<sup>b</sup> 1.6
Ethyl 2,2,2-trifluoroacetate .....	383-63-1	CF <sub>3</sub> COOCH <sub>2</sub> CH <sub>3</sub> .....	<sup>b</sup> 1.3
<b>Carbonofluoridates</b>			
Methyl carbonofluoride .....	1538-06-3	FCOOCH <sub>3</sub> .....	<sup>b</sup> 95
1,1-Difluoroethyl carbonofluoride .....	1344118-11-1	FCOOCH <sub>2</sub> CH <sub>3</sub> .....	<sup>b</sup> 27
<b>Fluorinated Alcohols Other Than Fluorotelomer Alcohols</b>			
Bis(trifluoromethyl)-methanol .....	920-66-1	(CF <sub>3</sub> ) <sub>2</sub> CHOH .....	195
(Octafluorotetramethyl-ene) hydroxymethyl group .....	NA	X-(CF <sub>3</sub> ) <sub>4</sub> CH(OH)-X .....	73
2,2,3,3,3-Pentafluoropropanol .....	422-05-9	CF <sub>3</sub> CF <sub>2</sub> CH <sub>2</sub> OH .....	42
2,2,3,3,4,4-Heptafluorobutan-1-ol .....	375-01-9	C <sub>3</sub> F <sub>7</sub> CH <sub>2</sub> OH .....	<sup>b</sup> 25
2,2,2-Trifluoroethanol .....	75-89-8	CF <sub>3</sub> CH <sub>2</sub> OH .....	<sup>b</sup> 20
2,2,3,4,4,4-Hexafluoro-1-butanol .....	382-31-0	CF <sub>3</sub> CHFCF <sub>2</sub> CH <sub>2</sub> OH .....	<sup>b</sup> 17
2,2,3,3-Tetrafluoro-1-propanol .....	76-37-9	CHF <sub>2</sub> CF <sub>2</sub> CH <sub>2</sub> OH .....	<sup>b</sup> 13
2,2-Difluoroethanol .....	359-13-7	CHF <sub>2</sub> CH <sub>2</sub> OH .....	<sup>b</sup> 3
2-Fluoroethanol .....	371-62-0	CH <sub>2</sub> FCH <sub>2</sub> OH .....	<sup>b</sup> 1.1
4,4,4-Trifluorobutan-1-ol .....	461-18-7	CF <sub>3</sub> (CH <sub>2</sub> ) <sub>2</sub> CH <sub>2</sub> OH .....	<sup>b</sup> 0.05
<b>Unsaturated Perfluorocarbons (PFCs)</b>			
PFC-1114; TFE .....	116-14-3	CF <sub>2</sub> = CF <sub>2</sub> ; C <sub>2</sub> F <sub>4</sub> .....	<sup>b</sup> 0.004
PFC-1216; Dyneon HFP .....	116-15-4	C <sub>2</sub> F <sub>6</sub> ; CF <sub>3</sub> CF = CF <sub>2</sub> .....	<sup>b</sup> 0.05
PFC C-1418 .....	559-40-0	c-C <sub>5</sub> F <sub>8</sub> .....	<sup>b</sup> 1.97
Perfluorobut-2-ene .....	360-89-4	CF <sub>3</sub> CF = CFCF <sub>3</sub> .....	<sup>b</sup> 1.82
Perfluorobut-1-ene .....	357-26-6	CF <sub>3</sub> CF <sub>2</sub> CF = CF <sub>2</sub> .....	<sup>b</sup> 0.10
Perfluorobuta-1,3-diene .....	685-63-2	CF <sub>2</sub> = CFCF = CF <sub>2</sub> .....	<sup>b</sup> 0.003
<b>Unsaturated Hydrofluorocarbons (HFCs) and Hydrochlorofluorocarbons (HCFCs)</b>			
HFC-1132a; VF2 .....	75-38-7	C <sub>2</sub> H <sub>2</sub> F <sub>2</sub> , CF <sub>2</sub> = CH <sub>2</sub> .....	<sup>b</sup> 0.04
HFC-1141; VF .....	75-02-5	C <sub>2</sub> H <sub>3</sub> F, CH <sub>2</sub> = CHF .....	<sup>b</sup> 0.02
(E)-HFC-1225ye .....	5595-10-8	CF <sub>2</sub> CF = CHF(E) .....	<sup>b</sup> 0.06
(Z)-HFC-1225ye .....	5528-43-8	CF <sub>2</sub> CF = CHF(Z) .....	<sup>b</sup> 0.22
Solstice 1233zd(E) .....	102687-65-0	C <sub>3</sub> H <sub>2</sub> ClF <sub>5</sub> ; CHCl = CHCF <sub>3</sub> .....	<sup>b</sup> 1.34
HFC-1234yf; HFO-1234yf .....	754-12-1	C <sub>3</sub> H <sub>2</sub> F <sub>4</sub> ; CF <sub>3</sub> CF = CH <sub>2</sub> .....	<sup>b</sup> 0.31
HFC-1234ze(E) .....	1645-83-6	C <sub>3</sub> H <sub>2</sub> F <sub>4</sub> ; trans-CF <sub>3</sub> CH = CHF .....	<sup>b</sup> 0.97
HFC-1234ze(Z) .....	29118-25-0	C <sub>3</sub> H <sub>2</sub> F <sub>4</sub> ; cis-CF <sub>3</sub> CH = CHF; CF <sub>3</sub> CH = CHF .....	<sup>b</sup> 0.29
HFC-1243zf; TFP .....	677-21-4	C <sub>3</sub> H <sub>3</sub> F <sub>3</sub> ; CF <sub>3</sub> CH = CH <sub>2</sub> .....	<sup>b</sup> 0.12
(Z)-HFC-1336 .....	692-49-9	CF <sub>2</sub> CH = CHCF <sub>3</sub> (Z) .....	<sup>b</sup> 1.58
HFC-1345zfc .....	374-27-6	C <sub>2</sub> F <sub>5</sub> CH = CH <sub>2</sub> .....	<sup>b</sup> 0.09
Capstone 42-U .....	19430-93-4	C <sub>6</sub> H <sub>11</sub> F <sub>9</sub> ; CF <sub>3</sub> (CF <sub>2</sub> ) <sub>3</sub> CH = CH <sub>2</sub> .....	<sup>b</sup> 0.16
Capstone 62-U .....	25291-17-2	C <sub>8</sub> H <sub>13</sub> F <sub>13</sub> ; CF <sub>3</sub> (CF <sub>2</sub> ) <sub>3</sub> CH = CH <sub>2</sub> .....	<sup>b</sup> 0.11
Capstone 82-U .....	21652-58-4	C <sub>10</sub> H <sub>13</sub> F <sub>17</sub> ; CF <sub>3</sub> (CF <sub>2</sub> ) <sub>7</sub> CH = CH <sub>2</sub> .....	<sup>b</sup> 0.09
<b>Unsaturated Halogenated Ethers</b>			
PMVE; HFE-216 .....	1187-93-5	CF <sub>3</sub> OCF = CF <sub>2</sub> .....	<sup>b</sup> 0.17
Fluoroxene .....	406-90-6	CF <sub>3</sub> CH <sub>2</sub> OCH = CH <sub>2</sub> .....	<sup>b</sup> 0.05
<b>Fluorinated Aldehydes</b>			
3,3,3-Trifluoro-propanal .....	460-40-2	CF <sub>3</sub> CH <sub>2</sub> CHO .....	<sup>b</sup> 0.01

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[100-Year Time Horizon]

Name	CAS No.	Chemical formula	Global warming potential (100 yr.)
<b>Fluorinated Ketones</b>			
Novec 1230 (perfluoro (2-methyl-3-pentanone)) .....	756-13-8	CF <sub>3</sub> CF <sub>2</sub> C(O)CF (CF <sub>3</sub> ) <sub>2</sub> .....	<sup>b</sup> 0.1
<b>Fluorotelomer Alcohols</b>			
3,3,4,4,5,5,6,6,7,7,7-Undecafluoroheptan-1-ol .....	185689-57-0	CF <sub>3</sub> (CF <sub>2</sub> ) <sub>4</sub> CH <sub>2</sub> CH <sub>2</sub> OH .....	<sup>b</sup> 0.43
3,3,3-Trifluoropropan-1-ol .....	2240-88-2	CF <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> OH .....	<sup>b</sup> 0.35
3,3,4,4,5,5,6,6,7,7,8,8,9,9,9-Pentadecafluoronan-1-ol ...	755-02-2	CF <sub>3</sub> (CF <sub>2</sub> ) <sub>6</sub> CH <sub>2</sub> CH <sub>2</sub> OH .....	<sup>b</sup> 0.33
3,3,4,4,5,5,6,6,7,7,8,8,9,9,10,10,11,11,11-Nonadecafluoroundecan-1-ol.	87017-97-8	CF <sub>3</sub> (CF <sub>2</sub> ) <sub>8</sub> CH <sub>2</sub> CH <sub>2</sub> OH .....	<sup>b</sup> 0.19
<b>Fluorinated GHGs With Carbon-Iodine Bond(s)</b>			
Trifluoroiodomethane .....	2314-97-8	CF <sub>3</sub> I .....	<sup>b</sup> 0.4
<b>Other Fluorinated Compounds</b>			
Dibromodifluoromethane (Halon 1202) .....	75-61-6	CBR <sub>2</sub> F <sub>2</sub> .....	<sup>b</sup> 231
2-Bromo-2-chloro-1,1,1-trifluoroethane (Halon-2311/ Halothane).	151-67-7	CHBrClCF <sub>3</sub> .....	<sup>b</sup> 41
Fluorinated GHG Group <sup>d</sup>			Global warming potential (100 yr.)
Default GWP for Compounds for Which Chemical-Specific GWPs Are Not Listed Above			
Fully fluorinated GHGs .....			10,000
Saturated hydrofluocarbons (HFCs) with 2 or fewer carbon-hydrogen bonds .....			3,700
Saturated HFCs with 3 or more carbon-hydrogen bonds .....			930
Saturated hydrofluoroethers (HFEs) and hydrochlorofluoroethers (HCFEs) with 1 carbon-hydrogen bond .....			5,700
Saturated HFEs and HCFEs with 2 carbon-hydrogen bonds .....			2,600
Saturated HFEs and HCFEs with 3 or more carbon-hydrogen bonds .....			270
Fluorinated formates .....			350
Fluorinated acetates, carbonfluoridates, and fluorinated alcohols other than fluorotelomer alcohols .....			30
Unsaturated perfluorocarbons (PFCs), unsaturated HFCs, unsaturated hydrochlorofluorocarbons (HCFCs), unsaturated halogenated ethers, unsaturated halogenated esters, fluorinated aldehydes, and fluorinated ketones .....			1
Fluorotelomer alcohols .....			1
Fluorinated GHGs with carbon-iodine bond(s) .....			1
Other fluorinated GHGs .....			2,000

<sup>a</sup>The GWP for this compound was updated in the final rule published on November 29, 2013 [78 FR 71904] and effective on January 1, 2014.

<sup>b</sup>This compound was added to Table A-1 in the final rule published on December 11, 2014, and effective on January 1, 2015.

<sup>c</sup>The GWP for this compound was updated in the final rule published on December 11, 2014, and effective on January 1, 2015.

<sup>d</sup>For electronics manufacturing (as defined in § 98.90), the term “fluorinated GHGs” in the definition of each fluorinated GHG group in § 98.6 shall include fluorinated heat transfer fluids (as defined in § 98.98), whether or not they are also fluorinated GHGs.

[79 FR 73779, Dec. 11, 2014]

TABLE A-2 TO SUBPART A OF PART 98—UNITS OF MEASURE CONVERSIONS

To convert from	To	Multiply by
Kilograms (kg) .....	Pounds (lbs) .....	2.20462
Pounds (lbs) .....	Kilograms (kg) .....	0.45359
Pounds (lbs) .....	Metric tons .....	4.53592 × 10 <sup>-4</sup>
Short tons .....	Pounds (lbs) .....	2,000
Short tons .....	Metric tons .....	0.90718
Metric tons .....	Short tons .....	1.10231
Metric tons .....	Kilograms (kg) .....	1,000
Cubic meters (m <sup>3</sup> ) .....	Cubic feet (ft <sup>3</sup> ) .....	35.31467
Cubic feet (ft <sup>3</sup> ) .....	Cubic meters (m <sup>3</sup> ) .....	0.028317
Gallons (liquid, US) .....	Liters (l) .....	3.78541
Liters (l) .....	Gallons (liquid, US) .....	0.26417
Barrels of Liquid Fuel (bbl) .....	Cubic meters (m <sup>3</sup> ) .....	0.15891
Cubic meters (m <sup>3</sup> ) .....	Barrels of Liquid Fuel (bbl) .....	6.289
Barrels of Liquid Fuel (bbl) .....	Gallons (liquid, US) .....	42